

# TOSHIBA

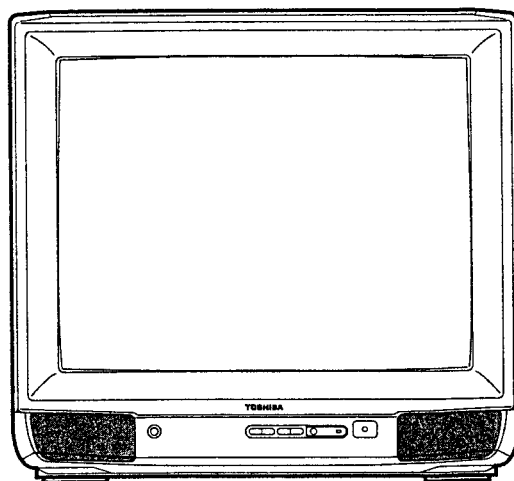
FILE NO. 030-9633

## SERVICE MANUAL

# COLOUR TELEVISION

C4E-R Chassis

# ***2562TR***



## SAFETY INSTRUCTIONS

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

### X-RAY RADIATION PRECAUTION

1. The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-ray radiation as result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 26.8 kV at zero beam current (minimum brightness) operating at 220V a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 27.5 kV. When checking the E.H.T., use the 'High Voltage Check' procedure in this manual using an accurate E.H.T. voltmeter.
2. The only source of X-RAY radiation in this receiver is the C.R.T. To prevent X-ray radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.
3. Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-ray radiation. For continued safety, replacement component should only be made after referring the Product Safety Notice below.

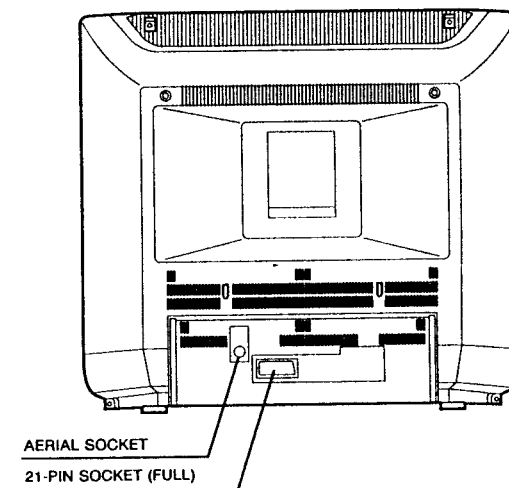
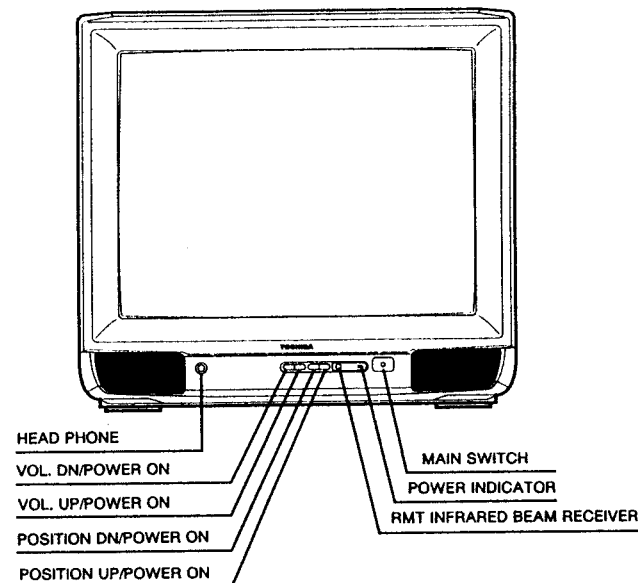
### SAFETY PRECAUTION

1. This receiver has a nominal working E.H.T. voltage of 24.5 kV. Extreme caution should be exercised when working on the receiver with the back removed. Do not attempt to service this receiver if you are not conversant with the precautions and procedures for working on high voltage equipment. When handling or working on the C.R.T., always discharge the anode to the receiver chassis before removing the anode cap. The C.R.T., if broken, will violently expel glass fragments. Use shatter proof goggles and take extreme care while handling. Do not hold the C.R.T. by the neck as this is a very dangerous practice.
2. It is essential that to maintain the safety of the customer all cable forms be replaced exactly as supplied from factory.
3. A small part of the chassis used in this receiver is, when operating, at approximately half mains potential at all times. It is therefore essential in the interest of safety that when serving or connecting any test equipment the receiver should be supplied via a suitable isolating transformer of adequate rating.
4. Replace blown fuses within the receiver with the fuse specified in the parts list.
5. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be a Toshiba approved type and must be mounted as the original.
6. Keep wires away from high temperature components.

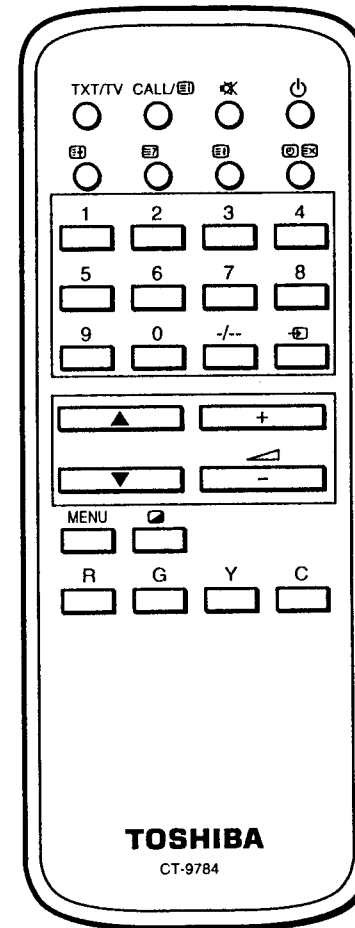
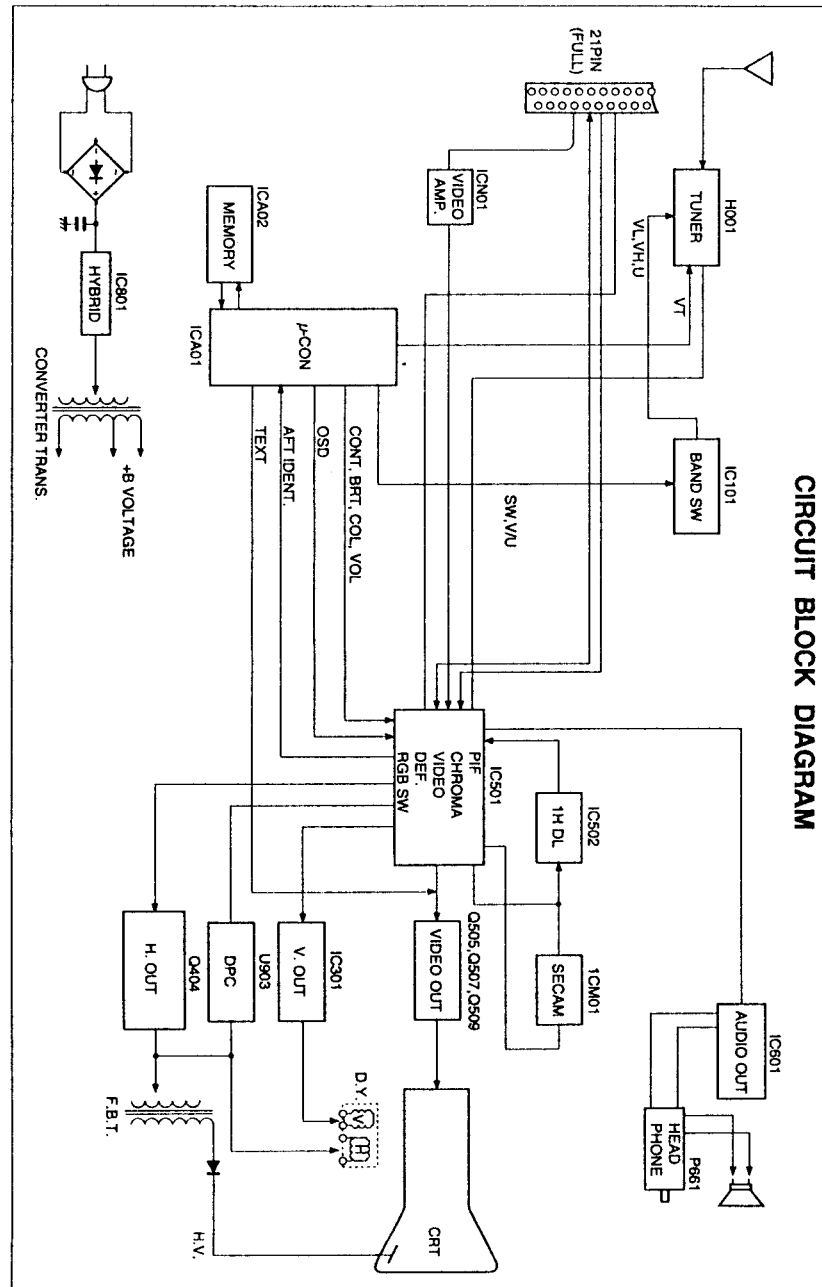
### PRODUCT SAFETY NOTICE

Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the schematic diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.

## FRONT CONTROLS AND REAR VIEWS



# REMOTE HAND HELD UNIT



## KEY ASSIGNMENT

- TXT/TV. .... TEXT, MTX, TV MODE SW.  
 CALL/ [ ] .... < TV MODE > DISPLAY CALL / < TEXT MODE > INDEX  
 [ ] .... MUTE  
 [ ] .... ON STAND-BY  
 [ ] .... < TEXT MODE > HOLD  
 [ ] .... < TEXT MODE > REVEAL / CONCEAL  
 [ ] .... < TEXT MODE > : F-T-B (FULL, TOP, BOTTOM)  
 [ ] / [ ] .... < TV MODE > TIME DISPLAY / < TEXT MODE > TEXT CLEAR  
 1~9, 0 .... TEN KEY  
 - / - .... 1 or 2 place  
 [ ] .... VIDEO INPUT (EXTERNAL INPUT SOURCE SW.)  
 [ ] .... UP (POS., CH., TEXT PAGE)  
 [ ] .... DOWN (POS., CH., TEXT PAGE)  
 [ ] + : LEVEL PLUS (VOLUME, MENU)  
 [ ] - : LEVEL MINUS (VOLUME, MENU)  
 MENU .... TUNING & OTHER MENU  
 [ ] .... PICTURE MENU

R; Red  
 G; Green  
 Y; Yellow  
 C; Cyan

) < TEXT MODE > AND < MENU MODE >  
 USED FLOP COLOUR KEY (4 key)

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

## INSTALLATION AND SERVICE ADJUSTMENTS

### GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 220 volts 50 Hz AC two pin power outlet. Turn the receiver ON. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

### AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 30 minutes in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source.

### HIGH VOLTAGE CHECK

**CAUTION:** There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

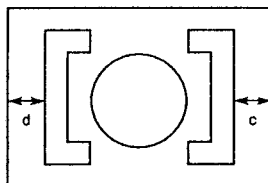
1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 27.5 kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 27.5 kV under any conditions.

### HEIGHT ADJUSTMENT

1. Receive the WG PHILIPS pattern, and set the contrast and colour to minimum, and the brightness to centre.
2. Adjust HEIGHT Control (R351) so that white blocks at top and bottom of the picture are just masked.

### HORIZONTAL CENTRE ADJUSTMENT

1. Receive the WG PHILIPS pattern.
2. Set the contrast and colour to minimum, and the brightness to centre.
3. Adjust H. CENTER SUB Control (R451) so the pattern can be located for d-c to be +4.0 mm.



### FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

### DELAYED R-F AGC ADJUSTMENT

1. Tune the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on MAIN Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) disappears on the screen.

### CRT GREY SCALE ADJUSTMENT

1. Press VIDEO INPUT button on Remote Control unit to turn TV to video input mode. (Video input should have no signal.) Next press PICTURE SELECT button to select function and set CONTRAST to minimum, BRIGHTNESS to maximum, COLOUR to minimum.
2. Turn the SCREEN Control (on T461) fully counterclockwise.
3. Set the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) counterclockwise to the centre position.
4. Set the GREEN and BLUE DRIVE Controls (R252, R253) to the centre position.
5. Set the CUT OFF SW. (S202) in the H. line position.
6. Set the SUB BRIGHTNESS Control to minimum.
7. Rotate the SCREEN Control gradually clockwise until the first horizontal line of a colour (RED, GREEN or BLUE) appears slightly on the screen. Set the SCREEN Control to this position.
8. Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE). The lines may look like white if the CUT OFF Controls are adjusted properly.
9. Return the CUT OFF SW. (S202) in the receiving position. Press VIDEO INPUT button to turn TV to the TV mode.
10. Set the BRIGHTNESS Control to the maximum and COLOUR Control to the centre.
11. Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
12. Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

### SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme of Philips pattern.
2. Set the CONTRAST Control to the minimum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the minimum.
4. Set the SUB-BRIGHT. Control (R551) so that the voltage across terminals Y-Z can be  $0.2 \pm 0.05V$  with voltmeter and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

### BUS DATA SETTING

1. When QA01 only is replaced, it is not necessary to change the mode data.
2. When memory IC (QA02) is replaced, change the mode data in the manner below.

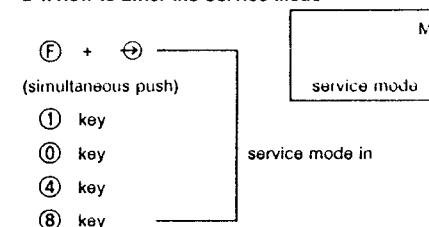
### ADJUSTMENT METHOD FOR SERVICING

#### 1. OUTLINE

In the service mode, MODE DATA adjustments can be made easily with user remote control unit. (CT-9689 only)

#### 2. SERVICE MODE OPERATION

##### 2-1. How to Enter the Service Mode



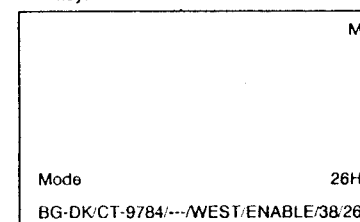
##### 2-2. How to Exit from the Service Mode

Exit the service mode by turning the power on/off with the remote control.

#### 3. ADJUSTMENT IN THE SERVICE MODE

Service Mode Level Adjustments

- (1) Push (F) + (M) key (simultaneous push) to appear Mode Data to be adjusted.
- (2) Adjust with the level UP/DOWN (VOL UP/DOWN) key.



Example of screen display in level adjustment

# PICTURE I-F ALIGNMENT

GENERAL..... Refer to figure 4 for test equipment connection.  
 PRELIMINARY STEPS..... Supply +5 volts to the 5V-1 line.  
 SIGNAL GENERATOR..... Connect to both leads of R101 with signal level of 75 dB $\mu$ , and open the solder-link at IF OUT of tuner on the Main Board. (See figure 4.)  
 DVM..... Connect to pin #44 of IC501 on the Main Board through the detector.

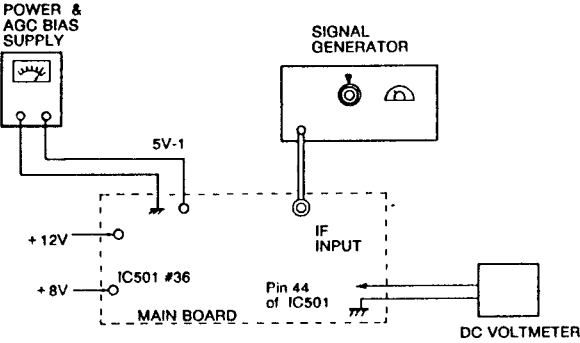
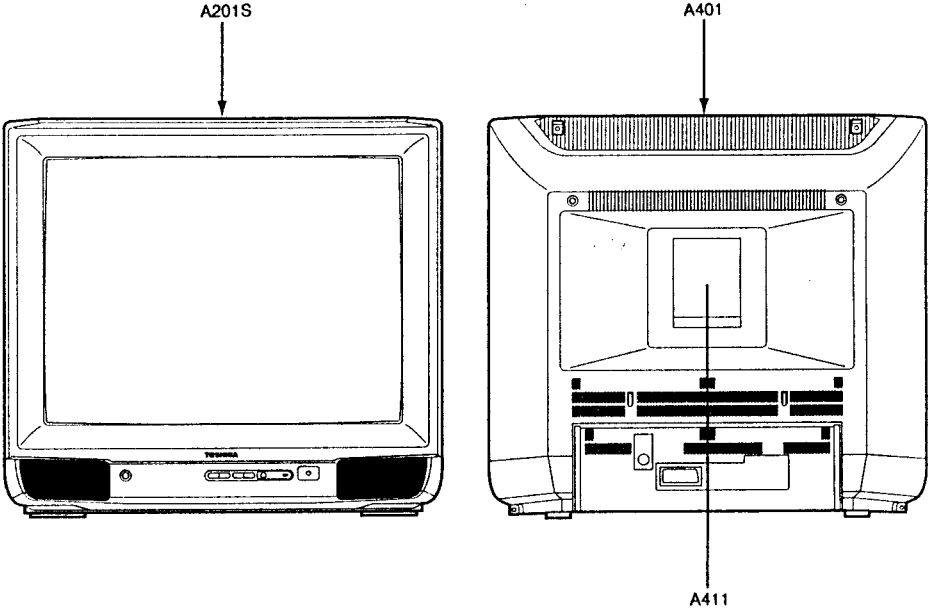


Figure 4. Picture IF Alignment

STEP	SIGNAL GENERATOR	ADJUST	REMARKS
Detector Coil	38.9 MHz CARRIER WAVE (Level 75 dB $\mu$ )	T103	1. Supply external DC power (+5V) to 5V-1 line. 2. Supply +8V to pin 36 of IC501. 3. Supply external DC power to +12V line. 4. Apply test signal to IF input. 5. Adjust T103 so that DC voltage at pin 44 of IC501 becomes 3.5V $\pm$ 0.5V.
After completing the above steps, disconnect the equipment and re-solder the links on the Main Board, and adjust the AGC Delay Control (R151) following DELAYED RF AGC ADJUSTMENTS.			

# CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A201S	23410602	Front Cover
△A401	23426410	Back Cover
A411	23560051	Label, Model No.

## CHASSIS REPLACEMENT PARTS LIST

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

**CAUTION:** The international hazard symbols "△" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

### NOTICE:

- The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.
- The PC board assembly with \* mark is no longer available after the end of the production.

### ABBREVIATIONS:

Capacitors..... CD : Ceramic Disk      PF : Plastic Film      EL : Electrolytic  
Resistors..... CF : Carbon Film      CC : Carbon Composition      MF : Metal Film  
OMF : Oxide Metal Film      VR : Variable Resistor      FR : Fusible Resistor  
(All CD and PF capacitors are  $\pm 5\%$ , 50V and all resistors,  $\pm 5\%$ , 1/6W unless otherwise noted.)

Location No.	Part No.	Description
<b>CAPACITORS</b>		
C101	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C102	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C103	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C104	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C105	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C106	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C107	24794102	EL, 1000 $\mu$ F, $\pm 20\%$ , 16V
C131	24538474	PF, 0.47 $\mu$ F
C132	24474102	CD, 1000pF, $\pm 10\%$
C133	24474101	CD, 100pF, $\pm 10\%$
C134	24590104	PF, 0.1 $\mu$ F
C135	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
C136	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C138	24206229	EL, 2.2 $\mu$ F, 50V
C141	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C142	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
C143	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C144	24206229	EL, 2.2 $\mu$ F, 50V
C145	24353120	CD, 12pF
C161	24793101	EL, 100 $\mu$ F, $\pm 20\%$ , 10V
C162	24473560	CD, 56pF
C163	24473560	CD, 56pF
C168	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C190	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C193	24797229	EL, 2.2 $\mu$ F, $\pm 20\%$ , 50V
C195	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C196	24590104	PF, 0.1 $\mu$ F
C197	24590104	PF, 0.1 $\mu$ F
C198	24590104	PF, 0.1 $\mu$ F
C199	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C201	24590473	PF, 0.047 $\mu$ F
C202	24590473	PF, 0.047 $\mu$ F
C203	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
C205	24794220	EL, 22 $\mu$ F, $\pm 20\%$ , 16V
C240	24538474	PF, 0.47 $\mu$ F
C302	24474101	CD, 100pF, $\pm 10\%$
C303	24590104	PF, 0.1 $\mu$ F
C304	24212472	CD, 4700pF, $\pm 10\%$
C306	24590102	PF, 1000pF
C312	24590392	PF, 3900pF

Location No.	Part No.	Description
C313	24538474	PF, 0.47 $\mu$ F
C314	24214151	CD, 150pF, $\pm 10\%$ , 500V
C315	24214221	CD, 220pF, $\pm 10\%$ , 500V
C317	24617915	EL, 1 $\mu$ F, $\pm 10\%$ , 50V
C318	24630798	EL, 3300 $\mu$ F, $\pm 10\%$ , 25kV
C323	24082049	PF, 0.047 $\mu$ F, 100V
C325	24668221	EL, 220 $\mu$ F, $\pm 20\%$ , 35V
C326	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C331	24668102	EL, 1000 $\mu$ F, $\pm 20\%$ , 35V
C332	24082057	PF, 0.22 $\mu$ F, 100V
C341	24666101	EL, 100 $\mu$ F, $\pm 20\%$ , 16V
C403	24206010	EL, 1 $\mu$ F, 50V
C406	24590472	PF, 4700pF
C407	24590472	PF, 4700pF
C408	24666331	EL, 330 $\mu$ F, $\pm 20\%$ , 16V
C409	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C410	24082261	PF, 5600pF, 100V
C416	24214391	CD, 390pF, $\pm 10\%$ , 500V
C417	24214821	CD, 820pF, $\pm 10\%$ , 500V
C418	24709100	EL, 10 $\mu$ F, $\pm 20\%$ , 200V
C419	24590223	PF, 0.022 $\mu$ F
C421	24082673	PF, 0.47 $\mu$ F, 250V
C422	24829473	PF, 0.047 $\mu$ F, 400V
C423	24082672	PF, 0.43 $\mu$ F, 250V
C440	24082583	PF, 7200pF, $\pm 3\%$ , 1500V
C441	24214221	CD, 220pF, $\pm 10\%$ , 500V
C443	24214221	CD, 220pF, $\pm 10\%$ , 500V
C444	24082517	PF, 5100pF, $\pm 3\%$ , 1800V
C445	24095903	PF, 0.056 $\mu$ F, $\pm 10\%$ , 250V
C446	24666471	EL, 470 $\mu$ F, $\pm 20\%$ , 16V
C447	24679479	EL, 4.7 $\mu$ F, $\pm 20\%$ , 250V
C448	24640908	EL, 33 $\mu$ F, $\pm 20\%$ , 160V
C449	24667102	EL, 1000 $\mu$ F, $\pm 20\%$ , 25V
C450	24095887	PF, 0.01 $\mu$ F, $\pm 3\%$ , 630V
C463	24212222	CD, 2200pF, $\pm 10\%$
C464	24082712	PF, 1.5 $\mu$ F, 250V
C466	24082669	PF, 0.33 $\mu$ F, 250V
C470	24666220	EL, 22 $\mu$ F, $\pm 20\%$ , 16V
C471	24538474	PF, 0.47 $\mu$ F
C480	24538474	PF, 0.47 $\mu$ F
C481	24666101	EL, 100 $\mu$ F, $\pm 20\%$ , 16V

Location No.	Part No.	Description
C482	24666101	EL, 100 $\mu$ F, $\pm 20\%$ , 16V
C501	24590104	PF, 0.1 $\mu$ F
C502	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C503	24794221	EL, 220 $\mu$ F, $\pm 20\%$ , 16V
C504	24797478	EL, 0.47 $\mu$ F, $\pm 20\%$ , 50V
C505	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
C506	24473680	CD, 68pF
C507	24473680	CD, 68pF
C508	24473680	CD, 68pF
C509	24797100	EL, 10 $\mu$ F, $\pm 20\%$ , 50V
C511	24590104	PF, 0.1 $\mu$ F
C512	24590104	PF, 0.1 $\mu$ F
C513	24590104	PF, 0.1 $\mu$ F
C514	24590472	PF, 4700pF
C516	24212561	CD, 560pF, $\pm 10\%$
C517	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
C518	24590473	PF, 0.047 $\mu$ F
C520	24590102	PF, 1000pF
C521	24590102	PF, 1000pF
C531	24436561	CD, 560pF
C532	24436561	CD, 560pF
C533	24436681	CD, 680pF
C534	24794471	EL, 470 $\mu$ F, $\pm 20\%$ , 16V
C536	24797479	EL, 4.7 $\mu$ F, $\pm 20\%$ , 50V
C601	24795471	EL, 470 $\mu$ F, $\pm 20\%$ , 25V
C602	24590104	PF, 0.1 $\mu$ F
C603	24795221	EL, 220 $\mu$ F, $\pm 20\%$ , 25V
C604	24474221	CD, 220pF, $\pm 10\%$
C605	24206010	EL, 1 $\mu$ F, 50V
C606	24795220	EL, 220 $\mu$ F, $\pm 20\%$ , 25V
C607	24590682	PF, 6800pF
C608	24797010	EL, 1 $\mu$ F, $\pm 20\%$ , 50V
C609	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
C610	24206010	EL, 1 $\mu$ F, 50V
C611	24212271	CD, 270pF, $\pm 10\%$
C612	24212102	CD, 1000pF, $\pm 10\%$
C613	24206010	EL, 1 $\mu$ F, 50V
C616	24797100	EL, 10 $\mu$ F, $\pm 20\%$ , 50V
C617	24206010	EL, 1 $\mu$ F, 50V
C618	24797470	EL, 47 $\mu$ F, $\pm 20\%$ , 50V
C619	24590332	PF, 3300pF
C620	24797229	EL, 2.2 $\mu$ F, $\pm 20\%$ , 50V
C622	24797010	EL, 1 $\mu$ F, $\pm 20\%$ , 50V
C624	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C625	24797470	EL, 47 $\mu$ F, $\pm 20\%$ , 50V
C626	24232103	CD, 0.01 $\mu$ F, +80%, -20%
C627	24232103	CD, 0.01 $\mu$ F, +80%, -20%
△C801	24082363	PF, 0.22 $\mu$ F, $\pm 20\%$ , AC250V
△C802	24094656	CD, 2200pF, $\pm 20\%$ , AC400V
△C803	24094656	CD, 2200pF, $\pm 20\%$ , AC400V
△C807	24092281	CD, 4700pF, $\pm 20\%$ , AC250V
△C808	24092281	CD, 4700pF, $\pm 20\%$ , AC250V
C809	24086037	EL, 270 $\mu$ F, $\pm 20\%$ , 400V
C812	24092341	CD, 470pF, $\pm 10\%$ , 2kV
△C813	24095931	PF, 2200pF, 1250V
C814	24590223	PF, 0.022 $\mu$ F
C815	24590182	PF, 1800pF
C816	24666470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
C817	24676220	EL, 22 $\mu$ F, $\pm 20\%$ , 100V
C820	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
C828	24212101	CD, 100pF, $\pm 10\%$
C829	24795102	EL, 1000 $\mu$ F, $\pm 20\%$ , 25V
C830	24092337	CD, 220pF, $\pm 10\%$ , 2kV
C831	24086953	EL, 220 $\mu$ F, $\pm 20\%$ , 160V

Location No.	Part No.	Description
C835	24797479	EL, 4.7 $\mu$ F, $\pm 20\%$ , 50V
C836	24797100	EL, 10 $\mu$ F, $\pm 20\%$ , 50V
C837	24797100	EL, 10 $\mu$ F, $\pm 20\%$ , 50V
C838	24538474	PF, 0.47 $\mu$ F
C849	24214471	CD, 470pF, $\pm 10\%$ , 500V
C901	24700100	EL, 10 $\mu$ F, $\pm 20\%$ , 250V
C902	24095931	PF, 2200pF, 1250V
CA01	24590333	PF, 0.033 $\mu$ F
CA14	24232103	CD, 0.01 $\mu$ F, +80%, -20%
CA15	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
CA16	24232103	CD, 0.01 $\mu$ F, +80%, -20%
CA18	24232103	CD, 0.01 $\mu$ F, +80%, -20%
CA19	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
CA20	24474101	CD, 100pF, $\pm 10\%$
CA21	24435470	CD, 47pF, 500V
CA22	24590104	PF, 0.1 $\mu$ F
CA23	24590104	PF, 0.1 $\mu$ F
CA24	24590104	PF, 0.1 $\mu$ F
CA37	24590104	PF, 0.1 $\mu$ F
CA39	24474391	CD, 390pF, $\pm 10\%$
CA40	24212221	CD, 220pF, $\pm 10\%$
CA42	24590104	PF, 0.1 $\mu$ F
CA43	24590104	PF, 0.1 $\mu$ F
CA44	24794470	EL, 47 $\mu$ F, $\pm 20\%$ , 16V
CA45	24473560	CD, 56pF
CA46	24473560	CD, 56pF
CA47	24212103	CD, 0.01 $\mu$ F, $\pm 10\%$
CA48	24232103	CD, 0.01 $\mu$ F, +80%, -20%
CA49	24475222	CD, 2200pF, 16V
CA50	24797479	EL, 4.7 $\mu$ F, $\pm 20\%$ , 50V
CD01	24796220	EL, 22 $\mu$ F, $\pm 20\%$ , 35V
CD06	24796470	EL, 47 $\mu$ F, $\pm 20\%$ , 35V
CD07	24796471	EL, 470 $\mu$ F, $\pm 20\%$ , 35V
CD08	24538124	PF, 0.12 $\mu$ F
CD09	24538124	PF, 0.12 $\mu$ F
CD10	24617981	EL, 2.2 $\mu$ F, $\pm 10\%$ , 50V
CD11	24676339	EL, 3.3 $\mu$ F, $\pm 20\%$ , 100V
CM02	24590223	PF, 0.022 $\mu$ F
CM03	24590104	PF, 0.1 $\mu$ F
CM04	24538224	PF, 0.22 $\mu$ F
CN02	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
CN03	24794100	EL, 10 $\mu$ F, $\pm 20\%$ , 16V
CV01	24794101	EL, 100 $\mu$ F, $\pm 20\%$ , 16V
CV02	24793471	EL, 470 $\mu$ F, $\pm 20\%$ , 10V
CV03	24232103	CD, 0.01 $\mu$ F, +80%, -20%
CX08	24590104	PF, 0.1 $\mu$ F
CX09	24590104	PF, 0.1 $\mu$ F
CX10	24590104	PF, 0.1 $\mu$ F
<b>RESISTORS</b>		
R101	24366101	CF, 100 ohm
R102	24366103	CF, 10k ohm
R103	24366103	CF, 10k ohm
R104	24366392	CF, 3900 ohm
R105	24366103	CF, 10k ohm
R135	24366682	CF, 6800 ohm
R136	24366122	CF, 1200 ohm
R137	24366681	CF, 680 ohm
R138	24366360	CF, 36 ohm
R140	24366104	CF, 100k ohm
R141	24366122	CF, 1200 ohm
R142	24366472	CF, 4700 ohm
R143	24366122	CF, 1200 ohm
R145	24366183	CF, 18k ohm

Location No.	Part No.	Description
R151	24066926	VR, 10k ohm, 1/10W
R161	24366183	CF, 18k ohm
R162	24366681	CF, 680 ohm
R163	24366682	CF, 6800 ohm
R171	24366153	CF, 15k ohm
R172	24366101	CF, 100 ohm
R173	24366271	CF, 270 ohm
R174	24366392	CF, 3900 ohm
R175	24366471	CF, 470 ohm
R177	24366101	CF, 100 ohm
R178	24366102	CF, 1k ohm
R179	24366391	CF, 390 ohm
R180	24366331	CF, 330 ohm
R181	24366151	CF, 150 ohm
R182	24366820	CF, 82 ohm
R185	24366101	CF, 100 ohm
R186	24366391	CF, 390 ohm
R187	24366223	CF, 22k ohm
R188	24366223	CF, 22k ohm
R189	24366102	CF, 1k ohm
R191	24942226	CC, 22M ohm, 1/2W
R201	24366511	CF, 510 ohm
R203	24366473	CF, 47k ohm
R205	24366274	CF, 270k ohm
R206	24366103	CF, 10k ohm
R207	24366103	CF, 10k ohm
R211	24366153	CF, 15k ohm
R212	24366183	CF, 18k ohm
R213	24366911	CF, 910 ohm
R215	24366621	CF, 620 ohm
R217	24366103	CF, 10k ohm
R240	24366183	CF, 18k ohm
R241	24366123	CF, 12k ohm
R252	24066596	VR, 500 ohm, 1/10W
R253	24066596	VR, 500 ohm, 1/10W
R301	24366155	CF, 1.5M ohm
R302	24366564	CF, 560k ohm
R304	24366102	CF, 1k ohm
R311	24366101	CF, 100 ohm
R316	24366102	CF, 1k ohm
R317	24366103	CF, 10k ohm
R318	24366473	CF, 47k ohm
R319	24383271	OMF, 270 ohm, 2W
R320	24383271	OMF, 270 ohm, 2W
R321	24366303	CF, 30k ohm
R322	24366244	CF, 240k ohm
R323	24322518	OMF, 0.51 ohm, 1W
R325	24366153	CF, 15k ohm
R327	24339479	MF, 4.7 ohm, 2W
R330	24321159	MF, 1.5 ohm, 1/2W
R333	24366622	CF, 6200 ohm
R334	24383751	OMF, 750 ohm, 2W
R340	24366473	CF, 47k ohm
R341	24366182	CF, 1800 ohm
R342	24366562	CF, 5600 ohm
R343	24310109	MF, 1.0 ohm, 1/2W
R344	24366392	CF, 3900 ohm
R345	24382470	OMF, 47 ohm, 1W
R351	24066606	VR, 1M ohm, 1/10W
R360	24366392	CF, 3900 ohm
R403	24366153	CF, 15k ohm
R407	24366222	CF, 2200 ohm
R409	24366564	CF, 560k ohm
R410	24552472	OMF, 4700 ohm, 1/2W

Location No.	Part No.	Description
R411	24366271	CF, 270 ohm
R414	24366221	CF, 220 ohm
R415	24382272	OMF, 2700 ohm, 1W
R416	24510562	Cement, 5600 ohm, 5W
R417	24366472	CF, 4700 ohm
R418	24366681	CF, 680 ohm
R419	24366562	CF, 5600 ohm
R420	24366222	CF, 2200 ohm
R422	24366273	CF, 27k ohm
R440	24366103	CF, 10k ohm
R441	24366103	CF, 10k ohm
R442	24382102	OMF, 1k ohm, 1W
R444	24338398	MF, 0.39 ohm, 1W
R446	24533151	FR, 150 ohm, 2W
R448	24338338	MF, 0.33 ohm, 1W
R451	24066600	VR, 10k ohm, 1/10W
R470	24338568	MF, 0.56 ohm, 1W
R471	24552101	OMF, 100 ohm, 1/2W
R472	24376393	CF, 39k ohm, 1/2W
R474	24366331	CF, 330 ohm
R475	24366102	CF, 1k ohm
R477	24366153	CF, 15k ohm
R480	24546229	FR, 2.2 ohm, 1/2W
R501	24366332	CF, 3300 ohm
R502	24366472	CF, 4700 ohm
R503	24366221	CF, 220 ohm
R504	24366221	CF, 220 ohm
R505	24366221	CF, 220 ohm
R506	24366183	CF, 18k ohm
R512	24366104	CF, 100k ohm
R513	24366473	CF, 47k ohm
R514	24552221	OMF, 220 ohm, 1/2W
R517	24366103	CF, 10k ohm
R521	24366102	CF, 1k ohm
R523	24366102	CF, 1k ohm
R525	24366102	CF, 1k ohm
R528	24366221	CF, 220 ohm
R529	24366681	CF, 680 ohm
R530	24366472	CF, 4700 ohm
R531	24366472	CF, 4700 ohm
R532	24366122	CF, 1200 ohm
R533	24366331	CF, 330 ohm
R534	24366331	CF, 330 ohm
R535	24366331	CF, 330 ohm
R536	24366152	CF, 1500 ohm
R537	24366152	CF, 1500 ohm
R538	24366152	CF, 1500 ohm
R540	24366222	CF, 2200 ohm
R541	24366222	CF, 2200 ohm
R543	24366222	CF, 2200 ohm
R547	24552560	OMF, 56 ohm, 1/2W
R548	24366101	CF, 100 ohm
R551	24066600	VR, 10k ohm, 1/10W
R557	24066600	VR, 10k ohm, 1/10W
R558	24066600	VR, 10k ohm, 1/10W
R559	24066600	VR, 10k ohm, 1/10W
R561	24366270	CF, 27 ohm
R562	24366680	CF, 68 ohm
R563	24366100	CF, 10 ohm
R564	24366181	CF, 180 ohm
R565	24366181	CF, 180 ohm
R574	24366622	CF, 6200 ohm
R575	24366133	CF, 13k ohm
R580	24366103	CF, 10k ohm

Location No.	Part No.	Description
R591	24383153	OMF, 15k ohm, 2W
R592	24383153	OMF, 15k ohm, 2W
R593	24383153	OMF, 15k ohm, 2W
R601	24366339	CF, 3.3 ohm
R602	24366123	CF, 12k ohm
R603	24366182	CF, 1800 ohm
R604	24366103	CF, 10k ohm
R605	24323479	OMF, 4.7 ohm, 2W
R606	24552331	OMF, 330 ohm, 1/2W
R607	24366103	CF, 10k ohm
R608	24552331	OMF, 330 ohm, 1/2W
R615	24366562	CF, 5600 ohm
R616	24366562	CF, 5600 ohm
R618	24366273	CF, 27k ohm
R621	24366222	CF, 2200 ohm
R622	24366682	CF, 6800 ohm
R623	24366682	CF, 6800 ohm
R624	24366681	CF, 680 ohm
R625	24366104	CF, 100k ohm
R626	24366103	CF, 10k ohm
R627	24366153	CF, 15k ohm
R628	24366104	CF, 100k ohm
R629	24366153	CF, 15k ohm
R630	24366392	CF, 3900 ohm
R638	24366102	CF, 1k ohm
R639	24366683	CF, 68k ohm
R641	24366103	CF, 10k ohm
R642	24366153	CF, 15k ohm
R644	24366332	CF, 3300 ohm
R645	24366204	CF, 200k ohm
R646	24366392	CF, 3900 ohm
R647	24366153	CF, 15k ohm
△R601	24009954	Metal-Glazed Resistor, 2.2M ohm, 1/2W
R803	24366684	CF, 680k ohm
R804	24366561	CF, 560 ohm
R805	24377394	CF, 390k ohm, 1W
R806	24383390	OMF, 39 ohm, 2W
R807	24383390	OMF, 39 ohm, 2W
R808	24531100	FR, 10 ohm, 1/2W
R809	24366561	CF, 560 ohm
R810	24366561	CF, 560 ohm
R811	24322278	MF, 0.27 ohm, 1W
R812	24366470	CF, 47 ohm
R813	24366301	CF, 300 ohm
R814	24366102	CF, 1k ohm
R815	24366561	CF, 560 ohm
R816	24366103	CF, 10k ohm
R817	24366102	CF, 1k ohm
R818	24366102	CF, 1k ohm
R819	24381100	OMF, 10 ohm, 1/2W
R820	24366561	CF, 560 ohm
R825	24366472	CF, 4700 ohm
R828	24366339	CF, 3.3 ohm
R842	24366681	CF, 680 ohm
R843	24366821	CF, 820 ohm
△R844	24005007	Metal-Glazed Resistor, 8.2M ohm, 1W
R848	24366392	CF, 3900 ohm
R860	24366561	CF, 560 ohm
R864	24382560	OMF, 56 ohm, 1W
R865	24366681	CF, 680 ohm
R866	24366471	CF, 470 ohm
R867	24366103	CF, 10k ohm

Location No.	Part No.	Description
R868	24366472	CF, 4700 ohm
R870	24383822	OMF, 8200 ohm, 2W
R871	24366472	CF, 4700 ohm
R872	24569339	Cement, 3.3 ohm, 10W
R878	24531270	FR, 27 ohm, 1/2W
R879	24366472	CF, 4700 ohm
R884	24531120	FR, 12 ohm, 1/2W
△R890	24019340	PTC Thermistor, 18 ohm, 290V
R893	24366103	CF, 10k ohm
R901	24552272	OMF, 2700 ohm, 1/2W
R902	24552272	OMF, 2700 ohm, 1/2W
R903	24552272	OMF, 2700 ohm, 1/2W
R920	24000884	FR, 3 ohm, 1W
RA01	24366103	CF, 10k ohm
RA02	24366103	CF, 10k ohm
RA03	24366103	CF, 10k ohm
RA05	24366103	CF, 10k ohm
RA06	24366103	CF, 10k ohm
RA07	24366472	CF, 4700 ohm
RA09	24019001	MF, 100k ohm, ±1%, 1/4W
RA14	24366102	CF, 1k ohm
RA15	24366102	CF, 1k ohm
RA16	24366102	CF, 1k ohm
RA17	24366471	CF, 470 ohm
RA18	24366561	CF, 560 ohm
RA21	24366683	CF, 68k ohm
RA24	24366225	CF, 2.2M ohm
RA25	24366333	CF, 33k ohm
RA27	24366333	CF, 33k ohm
RA28	24000242	MF, 18k ohm, ±1%, 1/4W
RA33	24366391	CF, 390 ohm
RA34	24000245	MF, 33k ohm, ±1%, 1/4W
RA35	24366471	CF, 470 ohm
RA37	24366273	CF, 27k ohm
RA40	24366391	CF, 390 ohm
RA41	24366103	CF, 10k ohm
RA42	24366103	CF, 10k ohm
RA46	24366103	CF, 10k ohm
RA49	24366103	CF, 10k ohm
RA54	24366472	CF, 4700 ohm
RA55	24366471	CF, 470 ohm
RA56	24366471	CF, 470 ohm
RA57	24366103	CF, 10k ohm
RA58	24366222	CF, 2200 ohm
RA59	24366471	CF, 470 ohm
RA60	24366331	CF, 330 ohm
RA61	24366103	CF, 10k ohm
RA64	24366103	CF, 10k ohm
RA65	24366103	CF, 10k ohm
RA70	24366332	CF, 3300 ohm
RA71	24366682	CF, 6800 ohm
RA72	24366203	CF, 20k ohm
RA76	24366103	CF, 10k ohm
RA78	24366102	CF, 1k ohm
RA81	24366471	CF, 470 ohm
RA86	24366103	CF, 10k ohm
RA88	24366103	CF, 10k ohm
RA90	24366103	CF, 10k ohm
RA91	24366102	CF, 1k ohm
RA92	24366473	CF, 47k ohm
RA96	24366123	CF, 12k ohm
RA97	24366152	CF, 1500 ohm
RA98	24366154	CF, 150k ohm

Location No.	Part No.	Description
RA99	24366564	CF, 560k ohm
RD01	24000211	FR, 15 ohm, 1/2W
RD02	24323229	MF, 2.2 ohm, 2W
RD03	24366562	CF, 5600 ohm
RD05	24552272	OMF, 2700 ohm, 1/2W
RD06	24366182	CF, 1800 ohm
RD07	24366683	CF, 68k ohm
RD08	24366203	CF, 20k ohm
RD09	24366152	CF, 1500 ohm
RD10	24366102	CF, 1k ohm
RD11	24366224	CF, 220k ohm
RD12	24366822	CF, 8200 ohm
RD13	24366223	CF, 22k ohm
RD14	24366103	CF, 10k ohm
RD15	24366104	CF, 100k ohm
RD16	24366752	CF, 7500 ohm
RD18	24366472	CF, 4700 ohm
RD19	24366272	CF, 2700 ohm
RD20	24366273	CF, 27k ohm
RD50	24066927	VR, 5k ohm, 1/10W
RD51	24066925	VR, 20k ohm, 1/10W
RE01	24366391	CF, 390 ohm
RN01	24366101	CF, 100 ohm
RN02	24552221	OMF, 220 ohm, 1/2W
RN05	24366564	CF, 560k ohm
RN07	24366223	CF, 22k ohm
RV01	24366151	CF, 150 ohm
RV02	24382101	OMF, 100 ohm, 1W
RV03	24552101	OMF, 100 ohm, 1/2W
RV04	24366680	CF, 68 ohm
RV05	24366103	CF, 10k ohm
RV06	24366102	CF, 1k ohm
RV08	24366560	CF, 56 ohm
RV09	24366102	CF, 1k ohm
RV10	24366750	CF, 75 ohm
RV11	24366102	CF, 1k ohm
RV12	24366750	CF, 75 ohm
RV13	24366102	CF, 1k ohm
RV14	24366750	CF, 75 ohm
RV15	24366750	CF, 75 ohm
RV16	24366682	CF, 6800 ohm
RV17	24366102	CF, 1k ohm
RV19	24366183	CF, 18k ohm
RV22	24366182	CF, 1800 ohm
RV23	24366102	CF, 1k ohm
RV24	24366751	CF, 750 ohm
RV25	24366102	CF, 1k ohm
RV26	24366391	CF, 390 ohm
RV27	24366391	CF, 390 ohm
RV28	24366391	CF, 390 ohm
RV29	24366681	CF, 680 ohm
RV30	24366681	CF, 680 ohm
RX08	24366222	CF, 2200 ohm
RX09	24366222	CF, 2200 ohm
RX10	24366222	CF, 2200 ohm

#### COILS & TRANSFORMERS

L101	23238560	Coil, Peaking, TRF4R68AJ
L102	23221803	Coil, Choke, TLN3040D
L105	23261986	Coil, RF Choke, TRF9220
L107	23238713	Coil, Peaking, TRF4120AJ
L108	23238715	Coil, Peaking, TRF4829AJ
L311	23103859	Coil (Ferrite Bead), TEM2011
L410	23289100	Coil, Peaking, TRF4100AF

Location No.	Part No.	Description
L412	23221684	Coil, Choke, TLN3191D
L414	23103859	Coil (Ferrite Bead), TEM2011
L421	23248116	Coil, Choke, TLN3368D
L441	23233948	Coil, Linearity, TLN2137G
L442	23221894	Coil, Choke, TLN3063
L590	23289100	Coil, Peaking, TRF4100AF
L811	23103859	Coil (Ferrite Bead), TEM2011
L821	23222694	Coil, Width, TLN2026
L823	23221747	Coil, Choke, TRF9253D
L826	23248073	Coil, Choke, TLN3299D
L829	23103859	Coil (Ferrite Bead), TEM2011
L866	23289229	Coil, Peaking, TRF42R2AF
△L901	23200275	Coil, Degaussing, TSB-2329BR
LA02	23289109	Coil, Peaking, TRF41R0AF
LA03	23103859	Coil (Ferrite Bead), TEM2011
LA04	23103859	Coil (Ferrite Bead), TEM2011
LA05	23103859	Coil (Ferrite Bead), TEM2011
LD02	23221896	Coil, Choke, TLN3061
LV01	23238714	Coil, Peaking, TRF4100AJ
T103	23262813	Coil, IF, TRF1077D
T401	23224336	Transformer, Horiz. Drive, TLN1083
△T461	23236454	Transformer, Flyback, TFB4117AR
△T801	23211891	Line Filter, TRF3164
△T803	23217352	Transformer, Converter, TPW3368AR

#### SEMICONDUCTORS

Q101	23119441	IC, LA7910
Q301	B0378560	IC, TA8427K
Q601	23119668	IC, TDA2611A
Q835	23318299	IC, L78MR05
QN01	23319504	IC, MM1031XS
Q105	A6708871	Transistor, 2SC388ATM
Q106	A6317440	Transistor, 2SC1815-Y
Q110	A6317440	Transistor, 2SC1815-Y
Q111	A6317440	Transistor, 2SC1815-Y
Q112	A6534053	Transistor, 2SA1015-Y(TE)
Q302	A6317440	Transistor, 2SC1815-Y
Q340	A6534053	Transistor, 2SA1015-Y(TE)
Q402	A678971D	Transistor, 2SC1569 FA-5
Q404	A6872801	Transistor, 2SD2253(FA)
Q405	A6317440	Transistor, 2SC1815-Y
Q406	A6534053	Transistor, 2SA1015-Y(TE)
Q408	23905815	IC, UPC2412AHF
Q470	A6547250	Transistor, 2SA1320
Q480	23904844	IC, MCT7809BT
Q501	23904604	IC, TDA8362
Q502	23904606	IC, TDA4661
Q504	A6534053	Transistor, 2SA1015-Y(TE)
Q505	A6363200	Transistor, 2SC3619
Q506	A6534053	Transistor, 2SA1015-Y(TE)
Q507	A6363200	Transistor, 2SC3619
Q508	A6534053	Transistor, 2SA1015-Y(TE)
Q509	A6363200	Transistor, 2SC3619
Q510	A6330059	Transistor, 2SC2482(C)
Q511	23314791	Transistor, 2PA1015Y
Q603	A6342206	Transistor, 2SC2878-A(TE)
Q604	A6534053	Transistor, 2SA1015-Y(TE)
Q606	A6010040	Transistor, RN2004
Q607	A6317440	Transistor, 2SC1815-Y
Q608	A6317440	Transistor, 2SC1815-Y
Q609	A6342206	Transistor, 2SC2878-A(TE)

Location No.	Part No.	Description
Q613	A6317440	Transistor, 2SC1815-Y
Q801	23314146	IC(STR), STR58041
Q802	A6534145	Transistor, 2SA1020-Y(C)
Q803	A6333346	Transistor, 2SC2655-Y(C)
Q804	A6317440	Transistor, 2SC1815-Y
Q805	A6317440	Transistor, 2SC1815-Y
Q806	A6317440	Transistor, 2SC1815-Y
△Q826	A8643108	Photo Coupler, TLP621(GR-LF)
Q828	A6317440	Transistor, 2SC1815-Y
Q831	A6317440	Transistor, 2SC1815-Y
Q836	23114530	Transistor, 2SA933S-Q
Q861	A6333346	Transistor, 2SC2655-Y(C)
Q870	A6333346	Transistor, 2SC2655-Y(C)
Q871	A6317440	Transistor, 2SC1815-Y
QA01	23905826	IC, SAA5290ZP/053
QA02	23904706	IC, NM24C02EN
QA03	23114528	Transistor, 2SC1740S-Q
QA04	A6317440	Transistor, 2SC1815-Y
QA08	A6317440	Transistor, 2SC1815-Y
QA10	A6317440	Transistor, 2SC1815-Y
QA25	A6317440	Transistor, 2SC1815-Y
QD01	A6625365	Transistor, 2SB688-O(BS)
QD02	23314794	Transistor, 2PC1815Y
QD03	A6534053	Transistor, 2SA1015-Y(TE)
QD04	A6342206	Transistor, 2SC2878-A(TE)
QM01	23904608	IC, TDA8395
QV01	A6317440	Transistor, 2SC1815-Y
QV03	A6534053	Transistor, 2SA1015-Y(TE)
QV05	A6317440	Transistor, 2SC1815-Y
QV07	A6002030	Transistor, RN1203
QV10	23114528	Transistor, 2SC1740S-Q
QV11	23114528	Transistor, 2SC1740S-Q
QV12	23114528	Transistor, 2SC1740S-Q
D101	23115599	Diode, 1N4148
D108	23115878	Diode, Zener, $\mu$ PC574J, (L)
D109	23115599	Diode, 1N4148
D111	23115599	Diode, 1N4148
D201	23115599	Diode, 1N4148
D202	A7150041	Diode, 1SS104
D203	23115599	Diode, 1N4148
D301	23118479	Diode, BYD33J
D302	23118479	Diode, BYD33J
D312	23316794	Diode, SC570A
D320	23118822	Diode, ERB12-02
D321	23118822	Diode, ERB12-02
D340	23316658	Diode, Zener, MTZJ3.6A
D401	23316792	Diode, SC215
D403	23316688	Diode, Zener, MTZJ9.1C
D406	23118479	Diode, BYD33J
D408	23118052	Diode, RU4Z
D410	23316687	Diode, Zener, MTZJ9.1B
D471	A7801205	SCR, SF0R3G42
D474	23316733	Diode, Zener, MTZJ20A
D475	23316719	Diode, Zener, MTZJ12B
D476	23118479	Diode, BYD33J
D501	23316669	Diode, Zener, MTZJ5.1B
D503	23115599	Diode, 1N4148
D591	23316554	Diode, 1SS146
D592	23316554	Diode, 1SS146
D593	23316554	Diode, 1SS146
D594	23115599	Diode, 1N4148
D601	23115599	Diode, 1N4148
D602	23115599	Diode, 1N4148
D603	23115599	Diode, 1N4148

Location No.	Part No.	Description
D605	23115599	Diode, 1N4148
D610	23115599	Diode, 1N4148
D801	23118037	Diode, RBV-406MLB
D810	23316725	Diode, Zener, MTZJ15B
D811	23115599	Diode, 1N4148
D812	23118479	Diode, BYD33J
D813	23115599	Diode, 1N4148
D814	23316672	Diode, Zener, MTZJ5.6B
D815	23115599	Diode, 1N4148
D816	23316648	Diode, Zener, MTZJ2.2A
D817	23118479	Diode, BYD33J
D818	23118479	Diode, BYD33J
D819	23316675	Diode, Zener, MTZJ6.2B
D830	23118052	Diode, RU4Z
D832	23118451	Diode, RU-4A
D847	23115599	Diode, 1N4148
D848	23316666	Diode, Zener, MTZJ4.7B
D860	23316674	Diode, Zener, MTZJ6.2A
D861	23316669	Diode, Zener, MTZJ5.1B
D870	23115599	Diode, 1N4148
D875	23115599	Diode, 1N4148
D878	23316689	Diode, Zener, MTZJ10A
DA01	23316675	Diode, Zener, MTZJ6.2B
DA02	23115599	Diode, 1N4148
DA03	23115599	Diode, 1N4148
DA32	23115599	Diode, 1N4148
DA99	23115599	Diode, 1N4148
DD01	23118479	Diode, BYD33J
DD02	23316582	Diode, ERC20-06
DD03	23118479	Diode, BYD33J
DD04	23115599	Diode, 1N4148
DD05	23115599	Diode, 1N4148
DD06	23115599	Diode, 1N4148
DE50	23118969	Diode (LED), MV57124, Red
DN01	23316669	Diode, Zener, MTZJ5.1B
DV01	23115599	Diode, 1N4148
DV04	23115599	Diode, 1N4148
DV05	23316666	Diode, Zener, MTZJ4.7B
DV07	23316669	Diode, Zener, MTZJ5.1B
DX01	23115599	Diode, 1N4148
DX03	23115599	Diode, 1N4148
DX04	23115599	Diode, 1N4148

#### MISCELLANEOUS

△F801	23144898	Fuse, 3.15A
F801A	23165433	Holder, Fuse
△F803	23144874	Fuse, 0.8A
F803A	23165433	Holder, Fuse
K901	23904750	Remote
P661	23365432	Jack, Earphone
△P901	23372014	Power Cord
PH01	23365598	Connector, 2Pin
S202	23344333	Switch, Lever, 1C3P
△S801	23145434	Switch, Power, 2C2P
SA01	23145430	Switch, Push, 1C1P
SA02	23145430	Switch, Push, 1C1P
SA03	23145430	Switch, Push, 1C1P
SA04	23145430	Switch, Push, 1C1P
△V901A	23902891	Socket, CRT, 10P
W661	23351031	Speaker, SPK-1306, 60x70mm, 3W
W662	23351031	Speaker, SPK-1306, 60x70mm, 3W
X501	23153360	Crystal, 4.43MHz



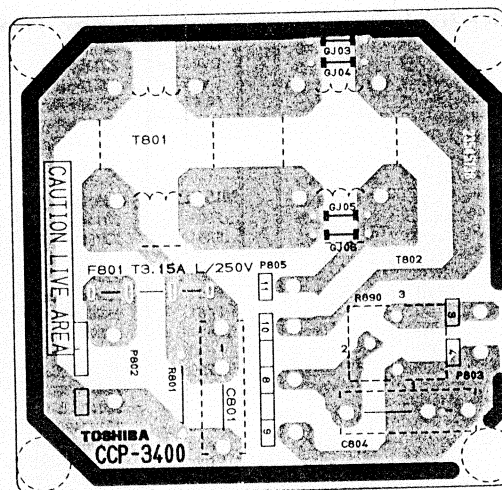
Location No.	Part No.	Description
XA01	23153930	Crystal, 12.0MHz
Z102	23303132	Filter, K2950M, 38.9M
Z103	23107855	Ceramic Filter, 5.5MHz, TCF1031
Z104	23107949	Ceramic Filter, 6.5MHz, SFE6.5MBF
Z105	23107927	Ceramic Video Trap, 5.5MHz, TCF1011
Z106	23107521	Ceramic Video Trap, 6.5MHz, TCF1068
Z604	23107744	Filter, TEM1012
Z605	23107744	Filter, TEM1012
Z606	23107744	Filter, TEM1012
Z607	23107744	Filter, TEM1012
Z608	23107744	Filter, TEM1012
Z609	23107744	Filter, TEM1012
ZA01	24094645	Capacitor Block, 0.01 $\mu$ Fx4, 50V

**PC BOARD ASSEMBLIES**

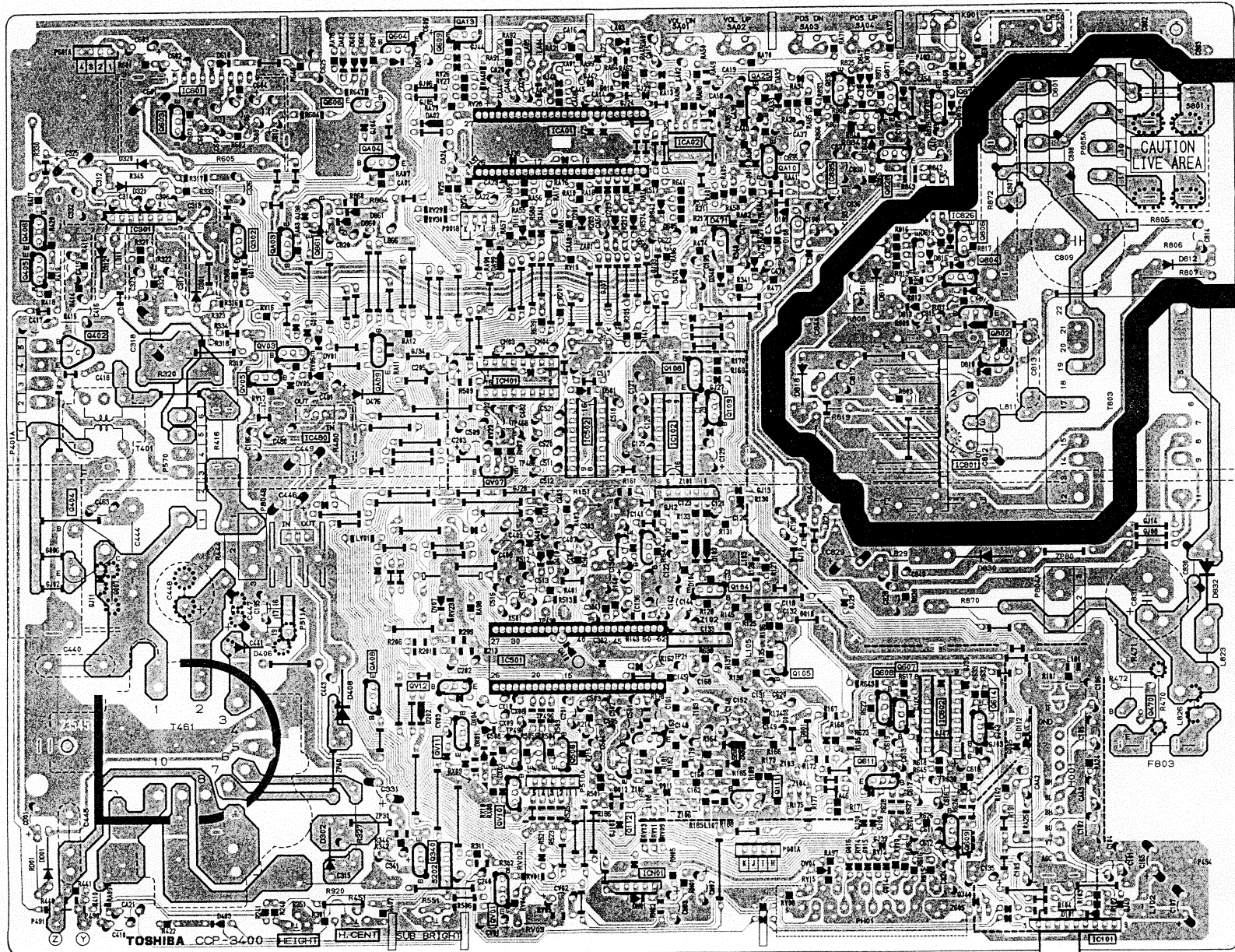
* U902A	23706067	Main Board, PB6608E
* U903A	23705767	Power Board, PB6609A1
* U903B	23705768	Headphone Board, PB6609A2
* U903C	23705769	DPC Board, PB6609A3
* U903D	23705770	CRT Drive Board, PB6609A4

Location No.	Part No.	Description
<b>PICTURE TUBE</b>		
$\Delta$ V901	23312643	Picture Tube, A59TMZ40X06
<b>TUNER</b>		
H001	23321209	Tuner, EGA13
<b>ACCESSORIES</b>		
K902	23306084	Remote Hand Unit, CT-9784
AT03	23305743	Battery Cover
Y101	23562918	Owner's Manual, English, 2562TR
Y102	23562919	Owner's Manual, Russian, 2562TR

**POWER BOARD PB6609A1**  
BOTTOM (FOIL) SIDE

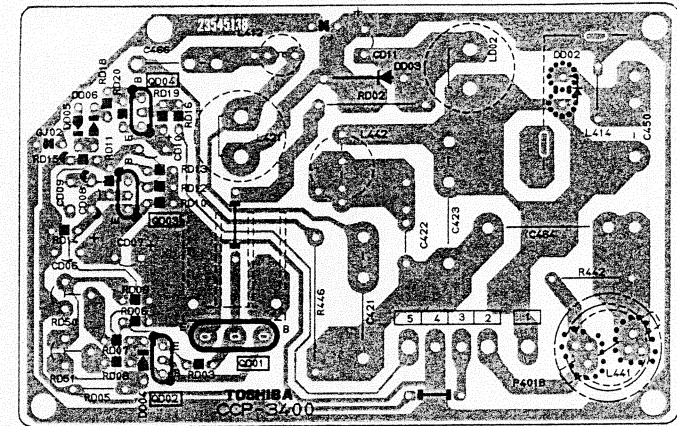


BOTTOM (FOIL) SIDE



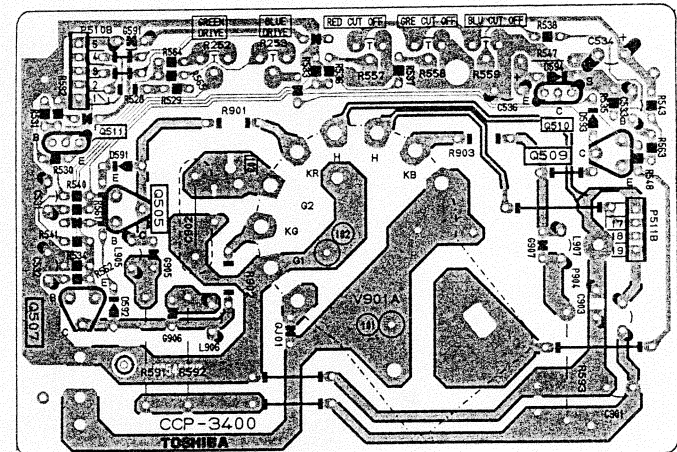
DPC BOARD PB6609A3

BOTTOM (FOIL) SIDE

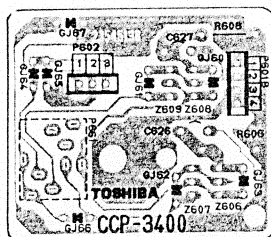


CRT DRIVE BOARD PB6609A4

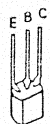
BOTTOM (FOIL) SIDE



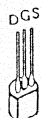
BOTTOM (FOIL) SIDE



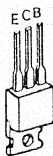
① BC327  
BC337  
BC547A  
BC547B  
BC547C  
BC557A  
BC557B  
BC556A



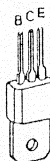
- ② 2SK30ATM  
2SK117



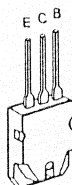
- ③ BD202



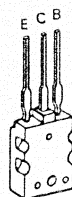
- ④ BF871  
2SD553  
2SC1569



- ⑤ 2SC3678  
2SC3182N



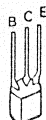
- ⑥ 2SD1427  
2SD1432



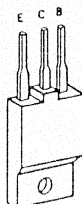
- ⑦ 2SC2482  
2SA1321  
2SC2230  
2SA1020  
2SC2655  
2SC752GTM



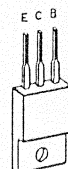
- ⑧ 2SC388ATM  
2SA1015  
2SC1959  
2SA562TM



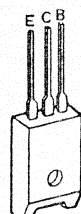
- ⑨ 2SD1548



- 00 2SC2023



- ON4409



## SPECIFICATIONS

<b>Input Power Rating:</b>	94 watts, AC 220 volts, 50 Hz
<b>Aerial Input Impedance:</b>	75 ohm unbalanced type for UHF and VHF
<b>Receiving Channels:</b>	CCIR (B/G PAL/SECAM) TV Broadcast Standard VHF: 2-4, 5-12, S1-S20, S21-S41 UHF: 21-69 CCIR (D/K PAL/SECAM) TV Broadcast Standard VHF: 2-4, 5-12, S1-S20, S21-S41 UHF: 21-69
<b>Intermediate Frequencies:</b>	Picture I-F carrier frequency ..... 38.9 MHz Sound I-F carrier frequency ..... 33.4 MHz (B/G), 32.4 MHz (D/K)
<b>Picture Tube:</b>	25 inches, A59TMZ40X06 590 mm (measured on diagonal of viewable picture area), 110° deflection
<b>Sound Output:</b>	3 watts (at 10% harmonic distortion) × 2
<b>Speakers:</b>	70 × 60 mm round 2 pc
<b>Aux. Terminals:</b>	21 pin socket (FULL)
<b>Cabinet:</b>	Table type
<b>Dimensions:</b>	Height ..... 556 mm Width ..... 600 mm Depth ..... 442 mm
<b>Mass:</b>	26 kg

Specifications are subject to change without notice.



## SCHEMATIC DIAGRAM MODEL : 2562TR

**CAUTION:** The international hazard symbols "Δ" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

### OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary  $\pm 20\%$ .
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken using a standard colour bar signal.
4. Make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

### EXPRESSION

#### VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in  $\mu F$  and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in  $\mu H$ , and the values less than 1 in H.

### NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ● : Solder links.

NOTE: DO NOT USE DIGITAL VOLT METER  
FOR MEASURING COLLECTOR  
VOLTAGE OF Q404.

### C4ER CIRCUIT SPEC COMPONENT VALUES BY CPT TYPE

No.	Loc.No.	R1	R2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

### C4ER CIRCUIT SPEC COMPONENT VALUES BY CRYSTAL TYPE (SUPPLIER)

No.	Loc.No.	R5	R6
1	X501	(N.D.K.)	(PHILIPS)
2	C516		

UNIT SN.	
MAIN	SN.
CRT-D	SN.

COPPER SIDE PARTS	
D410	SN. 23316324

